Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of the Amateur Service	)	
Rules to Provide For Greater Use of	)	WT Docket No. 97-12
Spread Spectrum Communication	)	
Technologies	)	

To: The Commission

REPLY COMMENTS OF WILLIAM A. TYNAN W3XO

1. I filed Comments in this proceeding on May 5, 1997. I have since reviewed the Comments filed by Radio Amateur Satellite Corporation (AMSAT), Central States VHF Society (CSVHFS), American Radio Relay League (ARRL), Tucson Amateur Packet Radio (TAPR), Raphael Soifer, (Soifer), Philip R. Karn, Jr. (Karn), Metricom, Robert J. Carpenter (Carpenter),The Part 15 Coalition (The Coalition), Lyle V. Johnson, Jr. (Johnson), Robert A. Buaas (Buaas) and The.220 MHZ Spectrum Management Association of Southern California (220 SMA). The following Reply Comments are provided with respect to the Comments reviewed.

2. To the extent that they are consistent with my comments, I support the views of AMSAT with respect to protection of frequencies utilized by the Amateur-satellite Service. I also support Soifer's comments with respect to protecting amateur earth-moon-earth (EME) communication. However, I contend that widespread use of any type of Spread Spectrum (SS) transmission in the amateur bands used for weak signal work, be it terrestrial, satellite or EME poses a serious threat to the continued viability of these activities.

3. The comments filed by CSVHFS agree with mine as to the need to protect narrowband weak-signal operations, such as long haul terrestrial, satellites and EME, from potential SS

interference, by limiting its use in frequency segments currently used by those modes. I would accept CSVHFS's limitation in the bands above 3.3 GHz, but contend that other current amateur activities, such as FM repeaters and packet systems operating in the lower frequency bands, need protection from Wide Band SS interference as well. Such protection can be achieved, while permitting the development of various Wide Band SS techniques, by adoption of the frequency segments for Wide Band SS proposed in my comments.

4. TAPR and Karn propose to extend amateur SS operation to all frequencies in the 50, 144 and 222 MHZ bands as well as the bands above 420 MHZ as proposed by the Commission. Since they have not recognized a distinction between Wide Band SS and Narrow Band SS, as proposed in my comments, and those submitted by Carpenter, it can only be assumed that they are referring to Wide Band SS. **Therefore, I strongly oppose this proposal for the reasons discussed in my Comments.** However, as discussed in my comments, I again urge the adoption of Narrow Band SS (less than 10 kHz bandwidth) for frequencies above 50 MHz where voice operation is permitted.

5. In their comments, Carpenter, TAPR, Buaas, Karn and Johnson take issue with the Commission's proposals to require automatic power control (APC), as did I. **I find it particularly interesting that Karn, who takes credit for the inclusion of APC for SS in RM-8737, is now opposing it. In addition, TAPR and Karn also oppose the Commission's proposed power limit of 100 W.** Apparently, Buaas does also when he says in his comments,"(a) operation in any amateur band above 50 MHZ, without restriction". He is unclear as to what he means by "without restriction".Does this mean at maximum authorized amateur power? He is also unclear as to whether he includes the currently restricted CW sub-bands from 50.0 to 50.1 MHz and 144.0 to 144.1 MHz. In his comments filed under RM-8737, Karn contended that SS is a power efficient mode and that it would be expected to utilizes powers of 1 Watt or less in most instances. **I submit that such "flip-flops" validate my contention that**

APC is impractical in amateur use; and calls into question the entire proposal to foist SS on the amateur community. Nevertheless, since I believe that SS does have a potential future in amateur radio, if allowed to develop in a non-combative environment, e.g. in designated sub-bands; I would not oppose their recent suggestions to eliminate the requirement for APC and restrict SS power to less than that authorized other amateur operation..

6. Much has been written in informal correspondence regarding identification by SS stations. Some have claimed that an "adequate ID scheme" should allay any fears that the weak signal community might have with respect to SS interference. The rationale goes something like: "All the weak signal operator would have to do is identify the callsign of the SS station and inform him or her of the interference and the situation would be resolved." There are several things wrong with this imagined scenario. First, it assumes one, or only a few SS stations. What happens if there are many? It might not be possible to identify any of them. The other major problem, is the "local coverage" mentality displayed by those advocating it as a potential "solution" to the SS interference problem. They think only in terms of signals that are there consistently, day after day/short range communication. Very often, in long haul weak signal work, the available propagation is present for only a short while, not hours or days, and sometimes not even minutes. The concept of identifying an SS station and notifying the operator in time for that operator to close down so that a weak signal operator can make a fleeting contact, is absolutely ridiculous. So, from the standpoint of correcting problems of interference to weak signal operators, the ID question is irrelevant. The Commission may care about it, but that is a separate issue. TAPR, Johnson and Buaas take exception to any requirement that would require identification that could be read by non-SS stations. There is much to be said for their position, and I support it <u>if</u> Wide Band SS is restricted to certain frequency segments as I proposed in my comments..

7. Most of those commenting in favor of SS use terms like "no restrictions" and "maximum flexibility". RM-8737 and this Docket are absolutely silent on what SS is. No bandwidth limits

are specified. Presumably amateur spread spectrum emissions would be limited to the amateur bands, but even that is not stated. The amateur community is being asked to accept this "new technology" without any information as to what it is or what its effect on current operations will be. Buaas take particular exception to my concerns, terming them "conjectures of doom as fact, without bothering to conduct any realistic tests". I am not in a position to conduct SS tests, realistic or otherwise. I have no SS equipment and acquiring it is not one of my highest priorities. Mr. Buaas presumably does have SS equipment, as he alludes to the STA, allowing SS operation on all bands above 50 MHz, he has had since 1994,. I assert that it is the responsibility of the SS proponents, to run tests to determine its interference potential, not the other way around. **SS is the new mode trying to gain access to the amateur bands. It is the responsibility of the new mode to demonstrate it can coexist, not the responsibility of current inhabitants to prove that it can't**. Mr. Buaas has had ample opportunity to test for the potential of SS interference with weak signal operators in his area. For one, E.R. (Chip) Angle N6CA, a prominent weak signal operator, has offered Mr. Buaas the opportunity of conducting tests to evaluate potential interference to weak signal modes. Mr. Angle has informed me that this offer was ignored completely. **One might assume that conducting such tests was one of the Commission's intentions in issuing the STA to Mr Buaas.. The fact that he has refused to accomplish such testing, would appear to be reasonable cause for revoking his STA**. The SS amateur community has had twelve years under the current rules, plus several STAs, to conduct tests with other band users and document results in literature commonly accessed by amateurs. They have not done so. The fact that SS interference to weak signal operations is likely, has been documented in simple straightforward calculations made and documented in comments submitted by Carpenter in this proceeding as well as under RM-8737. To date, SS proponents have failed to present anything that disproves these calculations. They have claimed that his assumptions were not representative of their concept of what amateur SS would be, generally a model based on cellular telephones. These same people now recommend departure from that low power model by abandoning APC and urging that SS operators be alowed to run 1.5 kW. Mr. Carpenter's

assumptions were based on the proposed Rules, not some imagined ***fictitious*** situation. **The failure of SS proponents to conduct and document tests and respond sensibly to fundamental radio propagation calculations, should in themselves, give the Commission pause as to whether this Docket is well founded.**

8. Much has also been said in informal correspondence between SS proponents and those concerned about its possible impact, with regard to the amateurs working out "band plan arrangements among themselves. In their comments, TAPR and Karn suggest that amateur SS experimenters will publish information about their activities on the Internet. For one thing, there is no assurance that they will. Certainly, no such requirement is contained in the proposed Rules. In addition, how would this prevent interference? Not all hams are on the Internet. As I have noted, many instances of propagation in which weak signal operators engage, are of fleeting nature. In its comments, ARRL states, "As has always been the case, advance planning and coordination will facilitate harmonious use of both SS and narrowband communications modes. Any fear of interference to voice repeaters or weak-signal communications can and should be avoided by intraservice cooperation in the selection of frequencies...". Presently, however, there are no provisions to accomplish this, especially for something as undefined as SS. As I said above, there is no definition in the Docket as to how wide it will be. Even if a frequency coordinating body did exist, how does one coordinate a frequency for mode which might be 1, 2, 10, or perhaps even 30 MHz wide? The fact is, that no national frequency coordinating body presently exists in amateur radio, thus making any such "intraservice cooperation" unlikely to say the least. ARRL, the only existing U.S. organization in a position to organize such efforts on a national basis. In recent years it has shown every intention of avoiding band planning and frequency coordination. This leaves U.S. radio amateurs with no organizational framework which might be capable of implementing the kind of planning and, coordination necessary. The present "ARRL Band Plans" covering VHF and UHF frequencies were developed some years ago by the VHF-UHF Advisory Committee (VUAC) which ARRL has since seen fit to abolish. This

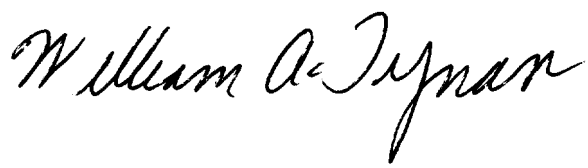
was replaced by the Spectrum Management Committee, which I am told by a reliable source, was not even consulted prior to submission of RM-8737 - leaving one to wonder as to its purpose. This committee has also since also been abolished, apparently leaving ARRL with no organized structure for band planning. ARRL does have a program to cooperate with various regional frequency coordinators in the organization of a national conference through which these groups might pool their resources. However, under the Commission's Rules, the jurisdiction of such coordinators covers only amateur repeater and remote base stations, and then only within such band segments as are allocated to them. Thus, the present structure of regional frequency coordination would provide no means of addressing SS operation in conjunction with amateur satellite, EME and other weak-signal operations. It must also be noted that EME and satellite operations are inherently international in nature. The same applies to other types of VHF operation, particularly on the 50 MHz band. Such operations are not, therefore, appropriate to be subjected to local or regional frequency coordination as inferred by 220 SMA in their comments. **I submit that the only viable approach is for the Commission to specify the frequency segments within the amateur bands on which Wide Band SS operation can take place. I continue to feel that the segments I proposed in my comments are appropriate and will afford SS ample room in which to develop and demonstrate its worth.**

9. I am particularly disturbed by the comments filed by Metricom and The Coalition. Metricom is an unlicenced user of the radio spectrum, namely 902 to 928 MHz and 2400 to 2450 MHz, and The Coalition represents various companies so engaged. Both urge the Commission to limit the power of amateur SS stations operating in these bands to the same level they, as Part 15 users, are permitted - 1 Watt. I contend that such a limitation would represent a very dangerous precedent which could have long term negative consequences for the Amateur Service and the Amateur-satellite Service.. One questions how long it would be before Metricom, or someone else, proposes to limit the power of all amateur transmission, not merely SS, in these bands, and others, to 1 Watt? The Coalition appears to go even farther, expressing concern that increased amateur

activity in these bands, using equipment manufactured for the Part 15 industry, might "upset the delicate balance that has been struck between co-users of shared spectrum." In others words, Part 15 users get along fine as long as there is little or no amateur activity on the bands they occupy. The Coalition also refers to "working with the amateur radio interests ... to resolve technical and interference problems when and where they arise". I was under the impression that Part 15 of the Commission's Rules makes it clear the unlicenced users are subject to whatever interference they might receive from licensed users. Where is the requirement for amateurs (licensed users) to "resolve" interference complaints from unlicenced users? This is a very important issue which goes far beyond this Docket and, in my opinion, must be addressed on a priority basis. It would appear that, if these unlicenced spectrum users have a service that is as vital as they contend, they should compete for spectrum space like any other commercial user.

10. Copies of these Reply Comments have been provided to those individuals and organization whose comments are cited herein.

Respectfully submitted,



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